AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A mobile station receiving apparatus on a down channel in a code division multiple access CDMA (Code Division Multiple Access) cellular system in which a base station modulates, by using orthogonal pseudo noise sequences, transmission signals towards a plurality of mobile stations, transmits the modulated signals synchronously, while said mobile stations receive the modulated signals distorted by a plurality of radio channels of which delay times are different, which is characterized in that said mobile station comprises:

an equalization filter; and

a transmission estimation unit,

wherein said transmission estimation unit outputs an estimation result of frequency characteristics of a transmission channel, and sets up the frequency characteristics of said equalization filter such that the frequency characteristics of said equalization filter are inverse to that of the estimation results; and

wherein said equalization filter equalizes spread spectrum signals based on the frequency response of the plurality of radio channels such that radio transmission channel distortion is eliminated.

2. (Previously Presented) The mobile station receiving apparatus according the claim 1, wherein said equalization filter comprises:

a plurality of delay circuits which are connected in series;

a plurality of multipliers each of which multiplies a prescribes weight coefficient by the output from each delay circuit; and

an adder for adding the output from said multipliers, wherein said modulated signals are equalized adaptively as the distortions of said radio channels changes.

3. (Previously presented) A mobile station receiving method on a down channel in a CDMA (Code Division Multiple Access) cellular system in which a base station modulates, by using orthogonal pseudo noise sequences, transmission signals towards a plurality of mobile stations, transmits the modulated signals synchronously, while said mobile stations receive the modulated signals distorted by a plurality of radio channels of which delay times are different, said method comprising:

equalizing then demodulating said modulated signals from said base station, by using a filter of which frequency characteristics is inverse with that of said radio channels, thereby generating an equalized, demodulated output;

in parallel, demodulating independently each of said modulated signals and combining the demodulation results, thereby generating a conventional output; and

selecting an output with higher communication quality from the equalized, demodulated output and the conventional output.

4. (Previously Presented) The mobile station receiving method according to claim 3, wherein said equalizing step further comprises:

connecting a plurality of delay circuits in series;

multiplying a prescribed weight coefficient by the output from each delay circuit using a plurality of multipliers; and

adding the outputs from said multipliers, wherein said modulated signals are equalized adaptively as the distortions of said radio channels changes.

5. (Previously Presented) A mobile station receiving method on a down channel in a code division multiple access CDMA (Code Division Multiple Access) cellular system in which a base station modulates, by using orthogonal pseudo noise sequences, transmission signals towards a plurality of mobile stations, transmits the modulated signals synchronously, while said mobile stations receive the modulated signals distorted by a plurality of radio channels of which delay times are different, which is characterized in that said method comprises:

converting said modulated signals received by an antenna into base band signals;

detecting frequency characteristics of said radio channels on the basis of said modulated signals;

equalizing said modulated signals using an equalization filter unit having frequency characteristics that are inverse from said radio channels, wherein radio transmission channel distortion is eliminated by equalizing spread spectrum signals based on the frequency response of the plurality of radio channels; and

demodulating the outputs from said equalization filter unit.

6. (Previously Presented) A mobile station receiving apparatus on a down channel in a CDMA (Code Division Multiple Access) cellular system in which a base station modulates, by using orthogonal pseudo noise sequences, transmission signals towards a plurality of mobile stations, transmits the modulated signals synchronously, while said mobile stations receive the modulated signals distorted by a plurality of radio channels of which delay times are different, which is characterized in that said mobile station comprises:

a first receiving unit,

a second receiving unit and

a selection unit, wherein:

said first receiving unit comprises:

a frequency conversion unit for converting said modulated signals received by an antenna into base band signals;

a channel estimation unit for detecting frequency characteristics of said radio channels on the basis of said modulated signals;

a filter unit having frequency characteristics that are inverse from said radio channels' frequency characteristics; and

a demodulator for demodulating the outputs from said filter unit of which inputs are said base band signals, and

said second receiving unit comprises:

a demodulation unit for demodulating independently each of said modulated signals which pass through a plurality of said radio channels of which delay times are different; and a combining unit for combining the demodulation results,

which is characterized in that said selection unit selects an output with higher communication quality is selected among the outputs by said first and second receiving units.

7. (Previously Presented) A communication system on a down channel in a code division multiple access CDMA (Code Division Multiple Access) cellular system in which a base station modulates, by using orthogonal pseudo noise sequences, transmission signals towards a plurality of mobile stations, transmits the modulated signals synchronously, while said mobile stations receive the modulated signals

distorted by a plurality of radio channels of which delay times are different, which is characterized in that said mobile station comprises:

a frequency conversion unit for converting said modulated signals received by an antenna into base band signals;

a channel estimation unit for detecting frequency characteristics of said radio channels on the basis of said modulated signals;

an equalization filter unit having frequency characteristics that are inverse from that of said radio channels, by using tap coefficients from said channel estimation unit; and

a demodulation unit for demodulating the outputs from said equalization filter unit of which inputs are said base band signals.

8. (Previously presented) A communication system on a down channel in a CDMA (Code Division Multiple Access) cellular system in which a base station modulates, by using orthogonal pseudo noise sequences, transmission signals towards a plurality of mobile stations, transmits the modulated signals synchronously, while said mobile stations receive the modulated signals distorted by a plurality of radio channels of which delay times are different, said mobile stations comprise:

a first receiving unit, comprising:

a frequency conversion unit for converting said modulated signals received by an antenna into base band signals;

a channel estimation unit for detecting frequency characteristics of said radio channels on the basis of said modulated signals;

a filter unit having frequency characteristics which are inverse of frequency characteristics of said radio channels; and

a demodulator for demodulating the outputs from said filter unit of which inputs are said based band signals,

a second receiving unit, comprising:

a demodulation unit for demodulating independently each of said modulated signals that pass through said plurality of radio channels, where each channel has a different delay time and a combining unit for combining the demodulation results, and

a selection unit that selects an output of said first and second receiving units that has higher communication quality.

9. (Previously Presented) The mobile station receiving apparatus according to claim 1, wherein said equalization filter equalizes distortion of received modulated signals before decoding the received signals.

10. (Previously Presented) The mobile station receiving method according to claim 3, wherein said equalizing is performed before said demodulating in said equalizing and demodulating step.